4WD-RCRA

SUBJ: Evaluation of Florida Department of Transportation - Fairbanks' status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: FLD 980 799 050

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I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Florida Department of Transportation (FDOT) - Fairbank's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

1) Human Exposures Controlled Determination (CA725)

2) Groundwater Releases Controlled Determination (CA750)

Concurrence by the RCRA Programs Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above. See Memo Attachment 1 for more specific information of the RCRIS definitions for CA725 and CA750.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the first evaluation performed by EPA for the FDOT Fairbanks' site. The evaluation and associated interpretations and conclusions on contamination, exposures and contaminant migration at the facility are based on information obtained from the following documents and conversations:

- Comprehensive Ground Water Monitoring Report, November 10, 1993
- CERCLA Consent Order, Docket No. 94-05-C, effective date December 13, 1993
- Final Removal Action Work Plan, March 1994
- Groundwater Assessment Report, April 30, 1995

- Closure/Post-Closure Permit, May 4, 1995
- HSWA Permit, May 4, 1995
- Final Closure Report, January 31, 1996
- Groundwater Monitoring Quarterly Report, October 20, 1995
- Groundwater Monitoring Quarterly Report, July 23, 1996
- Conversation with Mr. Bheem Kothur of FDEP relative to FDEP's evaluation of corrective measure effectiveness, September 29, 1998

III. FACILITY SUMMARY

The FDOT-Fairbanks facility is located approximately seven miles northeast of Gainesville in Alachua County, Florida. The original Fairbanks site encompasses 10 acres, of which an area of approximately 5 acres has been designated as a solid waste management unit (SWMU). The FDOT has purchased approximately 60 additional acres to the north and northeast of the original borrow pit. The permitted facility is defined to include the entire 70-acre property. The area surrounding the site is primarily rural with scattered residences (see Figure 1). The facility is approximately 3 miles upgradient of the Murphree well field, the primary drinking water source for the city of Gainesville, Florida.

The site is owned by FDOT and was used for years as a sand and clay borrow pit and storage area for FDOT supplies. After the sand from the borrow pit was depleted, FDOT used the site as a disposal area for waste asphalt, construction debris, and other materials from about 1956 to 1983. At some point, FDOT also began disposing of waste solvents and other hazardous substances at the site.

The FDOT-Fairbanks facility has been the subject of numerous regulatory actions under the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984, as well as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). After waste disposal at the RCRA Regulated Unit ended in 1983, corrective actions were initiated. In, 1983, FDOT conducted a physical closure, approved by FDEP, removing over 1,000 drums (most of which were empty), 47 one-gallon containers of acid (unspecified), and an unknown volume of contaminated soil. In addition to the removal of wastes, FDOT installed 34 monitor wells and initiated groundwater monitoring. A groundwater extraction system and spray irrigation field (used to treat extracted groundwater via aeration) were constructed in accordance with a consent order issued by EPA in 1984. Operation of the groundwater pump-and-treat system was discontinued in 1993.

In 1990, FDOT excavated an additional 345 drums, of which 250 drums were reported as empty. This action resulted in an enforcement action by EPA which reached final settlement in 1994. The consent order required FDOT to submit a complete and accurate Closure/Post-Closure Permit Application.

In December 1993, FDOT and EPA entered into a consent order (Sections 104, 106(a), 107, and 122 of CERCLA). The order required a removal action that included the excavation of

contaminated materials and the design, installation, and operation of a groundwater remediation system. In May 1995, FDEP issued a Closure/Post-Closure Permit (RCRA Permit) to FDOT for the Fairbanks facility, requiring corrective action for groundwater at the site. The EPA concurrently issued a HSWA Permit that deferred to the state's base program with regard to corrective action for the 5-acres identified as a SWMU.

The FDOT submitted a Final Closure Report in 1996. The EPA Emergency Response and Removal Branch issued a letter on January 13, 1998 approving the closure report and terminating the consent order. Groundwater monitoring and remediation is continuing at the facility under the requirements of the RCRA Permit.

Attachment 2 to this memorandum presents an evaluation of each environmental medium at the facility for the presence of contaminants and the potential for human exposure. The evaluations in that attachment provide the basis for the conclusions drawn in Sections IV and V.

IV. CONCLUSION FOR CA725:

As presented in the discussion in Memo Attachment 2, the engineered controls and institutional controls are controlling human exposures to all environmental media of concern at the FDOT-Fairbanks facility. Because these measures are controlling human exposures to unacceptable contamination, the writer recommends that **CA725 YE** be entered into RCRIS.

V. CONCLUSION FOR CA750:

Groundwater at the Fairbanks facility has been contaminated as a result of releases from a SWMU, and the concentrations of groundwater contaminants exceed MCLs or other relevant action levels. As presented in Memo Attachment 2, a groundwater remediation system has been installed and is in operation. Groundwater monitoring results indicate that the system is effective in curtailing further plume migration. Based on these factors, the writer recommends that **CA750 YE** be entered into RCRIS.

VI. SUMMARY OF FOLLOW-UP ACTIONS

The FDOT-Fairbanks facility is subject to the requirements of a base RCRA Permit, administered by FDEP, and a HSWA Permit, administered by EPA. The HSWA Permit currently defers primacy for the groundwater corrective action program to FDEP. The facility is continuing to monitor groundwater on a semi-annual basis, and FDEP is reviewing those results. Should an additional releases be discovered, both permits require notification and additional evaluation of the release. No further follow-up actions are currently considered necessary.

ATTACHMENT 1

A. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are five (5) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date [i.e., human exposures are controlled as of this date].

2) NA Previous determination no longer applicable as of this date.

3) NC No control measures necessary.

4) NO Facility does not meet definition [i.e., human exposures are not controlled as of this date].

5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

Note that CA725 is designed to measure human exposures over the entire facility (i.e., the code does not track SWMU specific actions or success). Every area at the facility must meet the definition before a YE or NC status code can be entered for CA725. The NO status code should be entered if there are current unacceptable risks to humans due to releases of hazardous wastes or hazardous constituents from any SWMU(s) or AOC(s). The IN status code is designed to cover those cases where insufficient information is available to make an informed decision on whether or not human exposures are controlled. If an evaluation determines that there are both unacceptable and uncontrolled current risks to humans at the facility (NO) along with insufficient information on contamination or exposures at the facility (IN), then the priority for the EI recommendation is the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes. In other words, YE, NC, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, it is Region 4's opinion that only YE, NC, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

B. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are five (5) status codes listed under CA750:

1) YE Yes, applicable as of this date [i.e., groundwater releases are controlled as of this date].

2) NA Previous determination no longer applicable as of this date.

3) NR No releases to groundwater.

4) NO Facility does not meet definition [i.e., groundwater releases are not controlled as of this date].

5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

The status codes for CA750 are designed to measure the adequacy of actively (e.g., pump and treat) or passively (e.g., natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. **Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered.**

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered. If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code.

In Region 4's opinion, the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NR status codes. In other words, YE, NR, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA750. Therefore, it is Region 4's opinion that only YE, NR, NO and IN should be utilized to categorize a facility for CA725. No facility in Region 4 should carry a NA status code.

ATTACHMENT 2

MEDIUM BY MEDIUM DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

This attachment presents a discussion of contamination at the site and relates the nature and extent of contamination to plausible human exposures relative to each environmental medium.

Groundwater

There are four aquifers of interest at the Fairbanks facility. These are (in descending order from ground surface):

- surficial
- upper Hawthorne
- lower Hawthorne
- Floridan

Groundwater flow within the surficial is toward the north to northeast, toward a small waterway, Hatchet Creek. Groundwater within the lower aquifers, however, flows more to the south to southwest.

Releases from the SWMU have resulted in groundwater contamination above maximum contaminant levels (MCLs). The primary constituents of concern are 1,1,1-trichloroethane, 1,1-dichoroethene 1,1-DCE, tetrachloroethene, trichloroethene, carbon tetrachloride, benzene, ethyl benzene, methyl chloride, toluene, vinyl chloride, xylenes, and 1,2-dichloroethane. The compound, 1,1-dichloroethene has been used as a "signature" contaminant because of its widespread occurrence at concentrations exceeding its MCL of 7 micrograms per liter (ug/L).

The surficial and Hawthorne (upper and lower) have been most severely impacted; although groundwater contaminants have been identified in the Floridan as well. Groundwater monitoring results in the surficial and upper Hawthorne aquifers consistently identify 1,1-DCE at concentrations ranging from near 7 ug/L to greater than 100 ug/L. The extent of contamination in the upper two aquifers is widespread, covering not only the FDOT site, but a large area surrounding the site. Site contaminants have been identified in one well approximately 1-1/2 miles downgradient of the site.

The migration of groundwater contaminants in the lower Hawthorne has been less extensive. Excessive levels of 1,1-DCE and other site constituents are generally confined to the immediate area beneath the facility. Similarly, groundwater contaminants are not widespread at high concentrations within the Floridan and are not known to exceed their respective MCLs. The Floridan is, however, an important source of drinking water within the local area and regionally.

Numerous potable supply wells once removed water from the Floridan aquifer near the facility, and several wells were also screened within the Hawthorne aquifers.

Prior to the CERCLA removal action, numerous residential wells in the area around the Fairbanks facility were sampled and found to be contaminated by constituents from the facility. To mitigate the potential harm, FDOT engaged in an aggressive public communications program to inform potentially affected people of the dangers. The FDOT purchased some properties immediately north of the facility, plugged and abandoned impacted residential wells, and provided alternate drinking water sources. In some cases, contaminated wells within the Hawthorne aquifers were abandoned and replaced with deeper wells, solidly cased through the affected zones, and screened within the unaffected Floridan. In many other cases, residences were hooked to a public water supply.

In response to the CERCLA consent order and to the RCRA Permit, FDOT has installed and is operating a groundwater remediation system. Groundwater is extracted via trenches in the surficial aquifer and from recovery wells within the deeper zones. The extracted groundwater is treated by air stripping. Groundwater monitoring results, facilitated by a total of 80 groundwater monitor wells, indicate that contaminant concentrations are being reduced in some locations, and that the system is effective in mitigating groundwater contaminant migration. The groundwater corrective action is being monitored by FDEP, and the remediation system will remain in place until groundwater has been restored to acceptable quality.

Although groundwater at the site is contaminated, there is a remediation system in place, and potentially affected residents have been provided alternative drinking water sources. There is also a requirement that any new potable supply wells be permitted by a regional authority. Although it is conceivable that an individual could install a well and become exposed, this seems unlikely. The engineered and institutional controls appear to be effective in controlling human exposures relative to groundwater.

Surface Water

The surface water at the site (Hatchet Creek) has been sampled previously but has not been shown to be contaminated. The groundwater remediation system appears to be effective in mitigating groundwater migration within the surficial aquifer toward the creek. Since the creek is effectively protected from contamination, there are no plausible exposures relative to surface water at the facility.

Soil

Releases from the SWMU resulted in the contamination of soils over a wide area within the facility. In response to the CERCLA consent order, however, FDOT excavated more than 100,000 cubic yards of contaminated soil as well as additional drums, acid containers, and other debris. Confirmation sampling after the excavation indicated that all sample met the criteria for terminating the excavation. After completion of the soil removal, FDOT constructed a cap,

varying in thickness from 3 to 11 feet over the entire SWMU. The entire site is fenced, and again, FDOT's public information program has been aggressive in reaching all nearby residents. Based on the above information, human exposures to contaminated soils, if any still exist, are controlled.

Air

As stated previously, contaminant sources have been removed from the site, and a cover is in place over the remaining soils. The only potential source for release of contaminants to the air is via release from the groundwater remediation system's air stripper. This system and the stripper are operated in accordance with federal and state environmental regulations. Based on this information, human exposures to contaminated air, if it exists, are controlled.